

# How Capital Flows in the Midst of Excess Savings Affect Macroeconomic Vulnerability

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In contrast to the period prior to the 1997/98 Asian financial crisis, emerging East Asia today is a region with excess savings, particularly corporate savings. Beginning in the mid-2000s, liquidity was further amplified by massive capital flows, particularly bank-led flows, and subsequently by debt-led flows following the introduction of quantitative easing in the United States. Both types of inflows are critical for bank-dependent Asia in need of long-term financing for infrastructure development. Yet, these two types of capital flows are also the most volatile. The surge of inflows in the midst of excess savings helped raise liquidity and growth, but also posed serious challenges to financial stability. As revealed by flow-of-funds data, the risk-taking behavior of economic agents and their preferences toward financial assets increased. Bank-led flows increased noncore liabilities and caused a credit boom, elevating the risk of procyclicality, while debt-led flows raised the vulnerability to a reversal of flows. These inflows also lowered the effectiveness of monetary policy, underscoring the need to supplement standard measures with a more effective macroprudential policy.

*Keywords:* capital flows, excess savings, flow-of-funds, procyclicality, risk-taking behavior

*JEL codes:* E44, F32

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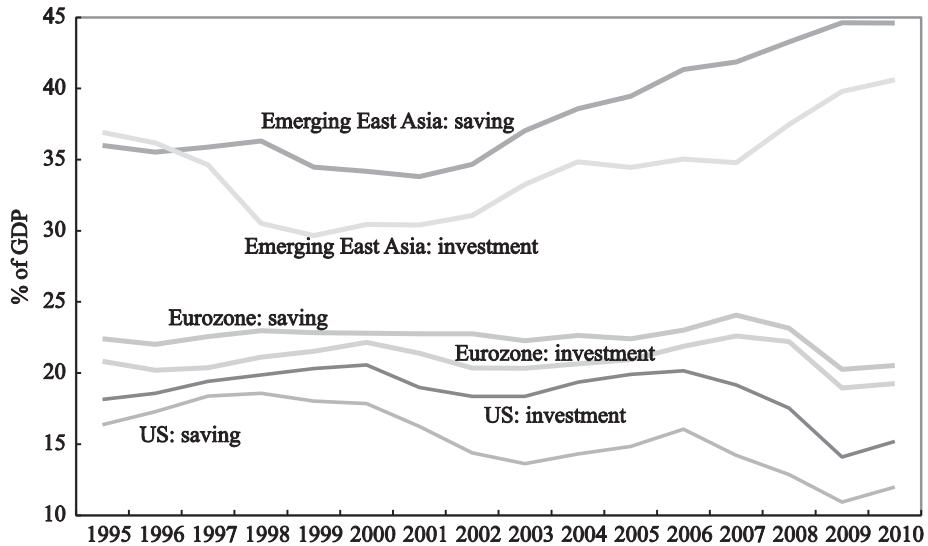
## I. Introduction

Two important changes occurred in recent decades with regard to emerging East Asia's economy. First, excess investment turned into excess saving. Before 1997, emerging East Asia was a region of excess investment. Following the 1997/98 Asian financial crisis (AFC), the investment rate plunged, driving up excess saving in the region. As the investment rate picked up in the early 2000s, emerging East Asian economies steadily recovered and the savings rate also began to climb, further widening the savings–investment gap. Figure 1 illustrates the widening of this gap in emerging East Asia following the AFC. The second change was the increased availability of funds spurred by capital inflows generated by the ultra-easy money policies in advanced economies and the subsequent introduction of quantitative

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Figure 1. Savings and Investment



GDP = gross domestic product, US = United States.

Notes: Gross domestic savings refer to GDP less final consumption expenditure (total consumption). Gross capital formation (formerly gross domestic investment) consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories. The eurozone comprises Austria, Belgium, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Malta, the Netherlands, Portugal, Slovakia, Slovenia, and Spain. Emerging East Asia comprises the People's Republic of China; Hong Kong, China; Indonesia; the Republic of Korea; Malaysia; the Philippines; Taipei, China; Thailand; and Viet Nam.

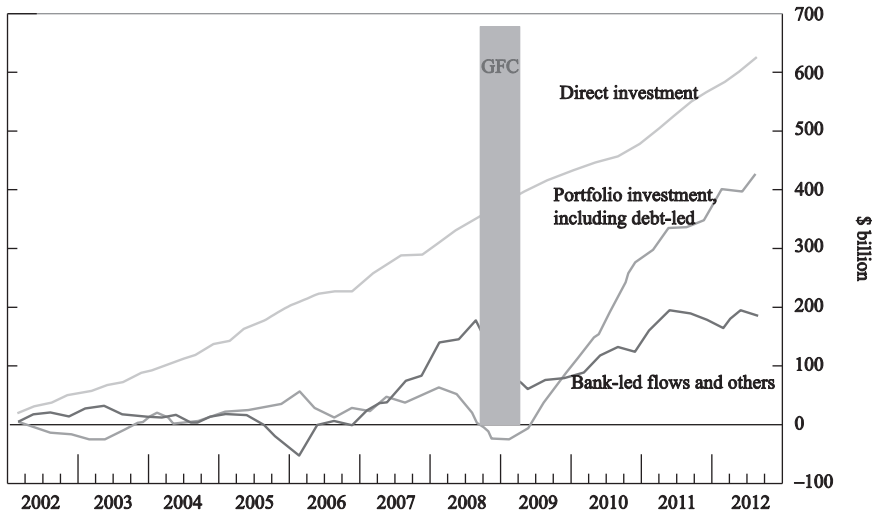
Sources: World Bank. World Development Indicators. <http://data.worldbank.org/data-catalog/world-development-indicators> (accessed 21 August 2012); For Taipei, China, Asian Development Bank. Statistical Database System. <https://sdb.sadb.org/> (accessed 21 August 2012).

easing in the United States (US). As a result, capital flows into emerging markets surged (Figure 2). Excluding foreign direct investment (FDI), the surge of inflows intermediated by banks (bank-led flows) began in the mid-2000s. After a brief dip during the global financial crisis (GFC) and after the implementation of quantitative easing in 2009, portfolio flows, including those entering debt markets (debt-led flows), began to dominate (Azis and Shin 2015).

Both changes altered the global liquidity and capital flow environment, affecting not only the size and variety of available sources of funds, but also the use of these funds in the recipient economies. Easy money that reflects externalities caused by unilateral policies (“financial nationalism”<sup>1</sup>) in advanced economies emboldened investors as evidenced by the preference toward risky investments and financial assets—behavior similar to what was observed in Asia during the years leading up to the AFC (Azis 2005) and in Europe prior to the ongoing crisis in the

<sup>1</sup>The term “financial nationalism” refers to a country’s unilateral act to deal exclusively with national financial matters without considering its possible externality and repercussions to other countries. See also Claessens (2009).

Figure 2. Gross Capital Inflows to Emerging Markets



GFC = global financial crisis.

Source: Azis and Shin 2015.

eurozone (Hale and Obstfeld 2014).<sup>2</sup> This trend was further reinforced by asymmetry in the incentive system and the growing opportunities for financial investment resulting from financial liberalization and innovation. While those changes helped boost the region's finance sector and economic growth, they also elevated the risks of volatility and financial instability.

In this paper, we argue that the surge of capital inflows in emerging East Asia in the midst of excess savings pose serious challenges to the region's financial stability. Inflows intermediated through banks could elevate the risk of procyclicality and undermine credit markets, and foreign capital flocking to capital markets could raise the finance sector's vulnerability to capital flow reversals and undermine long-term financing in capital markets. This is on top of the risks associated with growing pressures on exchange rates and the limited effectiveness of standard monetary policy.

The volatility of capital flows in emerging East Asia is analyzed by looking at how frequent the growth of each type of flow exceeded its standard deviation. Bank-led flows and debt-led flows have been found to be the most volatile.

The region's excess savings trend is traced by using flow-of-funds (FOF) data. Why FOF data? A standard approach using aggregate macroeconomic indicators, such as current account balance and net capital flows, does not allow us to delineate

<sup>2</sup>In their analysis, Hale and Obstfeld (2014) also argued that greater financial integration in Europe led to core European Monetary Union banks borrowing from outside the eurozone for significant lending to periphery borrowers. This has not only played a major role in the ongoing European crisis, but the impacts have also spilled over beyond the eurozone. Similarly, Azis, Mitra, and Baluga (2013) showed that the impacts of crises in the US and Europe—and the unilateral policy responses—have spilled over into Asia.

any change in the trends of how economic agents source and use their funds. It also diverts attention away from the global financing patterns that are at the core of financial fragility (Borio and Disyatat 2011). While the derived flows from current account data capture changes in net claims on an economy arising from trade in real goods and services, they exclude the underlying changes in gross flows and their contributions to existing stocks, including all transactions that involve only trade in financial assets. Yet, such transactions make up the bulk of today's cross-border financial activity.

The use of FOF data also enables us to analyze sector financing and financial market operations. In particular, the intersectoral impact of borrowing and lending flows can be traced. The case of the AFC is a notable example. One fundamental source of weakness in the affected economies during the years leading up to the AFC was the nature of capital inflows and the quality of investments. Huge influxes of short-term bank borrowing led to domestic credit booms that largely financed highly speculative investments. Even bank lending was used for stock purchases. Using the FOF data, one can trace the path of capital flows from the private sector to the banking sector and analyze how financial instability could emerge. By re-evaluating the case of Thailand during the AFC, Dawson (2004) showed how FOF analysis could capture the real vulnerabilities where macroeconomic indicators alone failed. These vulnerabilities could have been foreseen had FOF accounts been available and in use at the time.<sup>3</sup>

The paper is organized as follows. Section II discusses capital flow trends by focusing on the size and volatility of different types of flows. Section III looks at how excess savings evolved by evaluating the changes in the sources and uses of funds of different agents during the pre-GFC and GFC periods. These changes and the surge of liquidity provide the basis for subsequent analysis of agent preferences and risk-taking behavior in section IV. The analysis in section V focuses on the risks of procyclicality, vulnerability to capital flow reversals, and the ineffectiveness of standard policies. The paper concludes with a summary of the key findings.

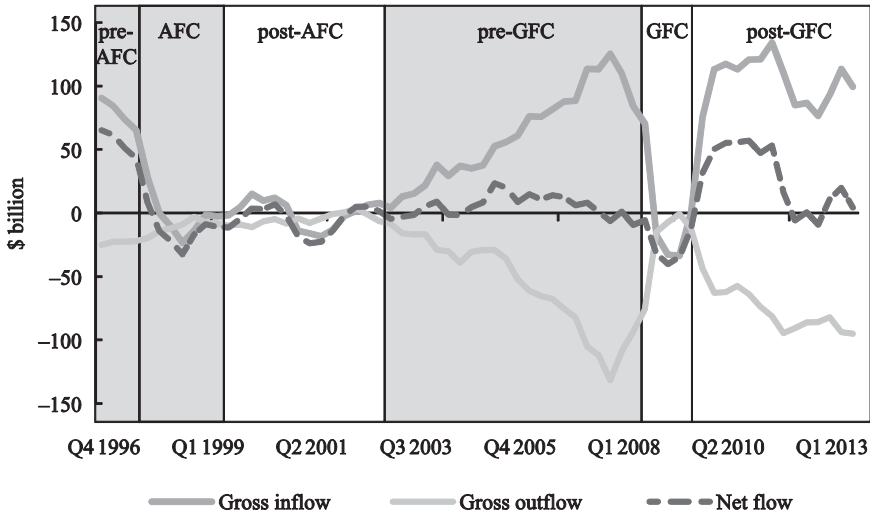
## II. Capital Flows

Of the roughly \$1 trillion in net private capital flows to emerging market economies each year, about half goes to Asia (IIF 2015). The combination of low interest rates in advanced economies since the mid-2000s and a quantitative easing policy in the US in response to the GFC has sparked capital flows to emerging East Asia. The region has also exhibited strong pull factors due to its steady growth, stable economy, and higher returns.

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<sup>3</sup>Dawson (2004) used the International Monetary Fund's financial accounts data to generate an FOF matrix for Thailand. Because the AFC underscored the importance of monitoring financial flows, improvements have since been made on the collection, standardization, and maintenance of data on FOF accounts in emerging East Asia, especially for those economies shaken by the crisis. An FOF matrix can now be directly sourced from official statistics in some Asian economies.

Figure 3. Gross and Net Capital Flows in Select Emerging Asian Economies



AFC = Asian financial crisis, GFC = global financial crisis.

Notes: Based on 4-quarter moving sums for Indonesia, the Republic of Korea, the Philippines, and Thailand. Inflows refer to bank flows from other investments on the liabilities side (assigned a positive value); outflows refer to the asset side (assigned a negative value).

Source: ADB calculations based on International Monetary Fund. Balance of Payments Statistics (BPM5 and BPM6). <http://data.imf.org/?sk=7A51304B-6426-40C0-83DD-CA473CA1FD52> (accessed 22 July 2013).

Since the AFC, capital flows other than short-term foreign debt have been dominant. Gross inflows increased significantly, but outflows have also been on the rise. Outward FDI and equity investment also increased, providing foreign asset buffers whenever markets became volatile. After recovering from a sharp fall during the AFC, gross inflows fluctuated before growing steadily again after 2002, intermediated predominantly by banks. The flows peaked in mid-2007 and fell again as the recession in the US began.<sup>4</sup> A sharp drop during the GFC led gross inflows to hit a bottom, falling even lower than the troughs reached during the AFC. Meanwhile, almost symmetrically, gross outflows began to rise in 2002 and peaked in mid-2007. Ultra-easy monetary policies and quantitative easing elevated risks in advanced economies, creating a strong push factor for further capital flows. As a result, gross inflows in emerging East Asia—most of which went through capital markets, driven largely by the search for yield—exceeded gross outflows during the post-GFC period (Figure 3).

<sup>4</sup>The decision of BNP Paribas to terminate withdrawals from three hedge funds and the bursting of the US housing bubble, which saw the values of securities tied to US real estate plummet, damaged global financial institutions. In August 2007, a number of central banks in advanced economies were actively pumping liquidity into the financial system to calm nerves amid fears of a credit crunch. The trigger for the panic was the decision by BNP Paribas to block withdrawals from three hedge funds due to what BNP Paribas (Boyd 2007) referred to as “complete evaporation of liquidity.” The subsequent bank run included the first run on a leading bank in the United Kingdom since the mid-19th century.

Growing production networks in line with a supply-chain model were among the most important pull factors for FDI in the region, with East and Southeast Asia alone accounting for more than one-fifth of all global FDI flows in 2012 to 2014 (UNCTAD 2015). A large portion of this was absorbed by the People's Republic of China (PRC). The region's rebalancing process in moving toward domestic demand-led growth also offered opportunities for investors. Flows through equity markets were strong, as were inflows to bond markets, amid low returns and slow-growth environment in industrial economies. Bank deposits from nonresidents also surged as interest rate differentials persisted.

But volatility also returned. Using the International Monetary Fund's Balance of Payments Statistics, we distinguish capital inflows as follows: (i) FDI consisting of direct investment, (ii) debt flows comprising debt securities and others including derivatives, (iii) bank flows, and (iv) equity flows for equity portfolio. We also distinguish periods with unusual volatility. "Surges" are characterized by a sharp increase in inflows and "stops" occur when there is a sharp decrease in inflows. For gross outflows, the corresponding terms are "flight" (sharp increase) and "retrenchment" (sharp decrease).<sup>5</sup> Using one standard deviation of the change in the mean of capital flows as thresholds, which are depicted as dashed lines in Figure 4, the following episodes were identified:<sup>6</sup>

### **Surge Episodes**

Equity-led: Q4 2009–Q1 2010

Debt-led (excluding banking flows): Q1 2002–Q3 2002, Q2 2007, and Q4 2007

Bank-led: Q1 1999–Q3 1999, Q1 2004, Q3 2009, Q2 2010, and Q4 2012

### **Stop Episodes**

Equity-led: Q4 2000, Q4 2004, Q4 2006–Q1 2007, and Q1 2008–Q3 2008

Debt-led (excluding banking flows): Q1 1997–Q3 1997, and Q1 2001–Q3 2001

Bank-led: Q4 1996, Q4 1997–Q2 1998, Q4 2008–Q1 2009, and Q3 2011–Q1 2012

### **Flight Episodes**

Equity-led: Q2 2007–Q4 2007

Debt-led (excluding banking flows): Q2 1999, Q4 2005, and Q4 2009–Q2 2010

Bank-led: Q2 1999–Q3 1999, Q4 2002–Q2 2003, Q3 2004, and Q1 2006–Q2 2006

### **Retrenchment Episodes**

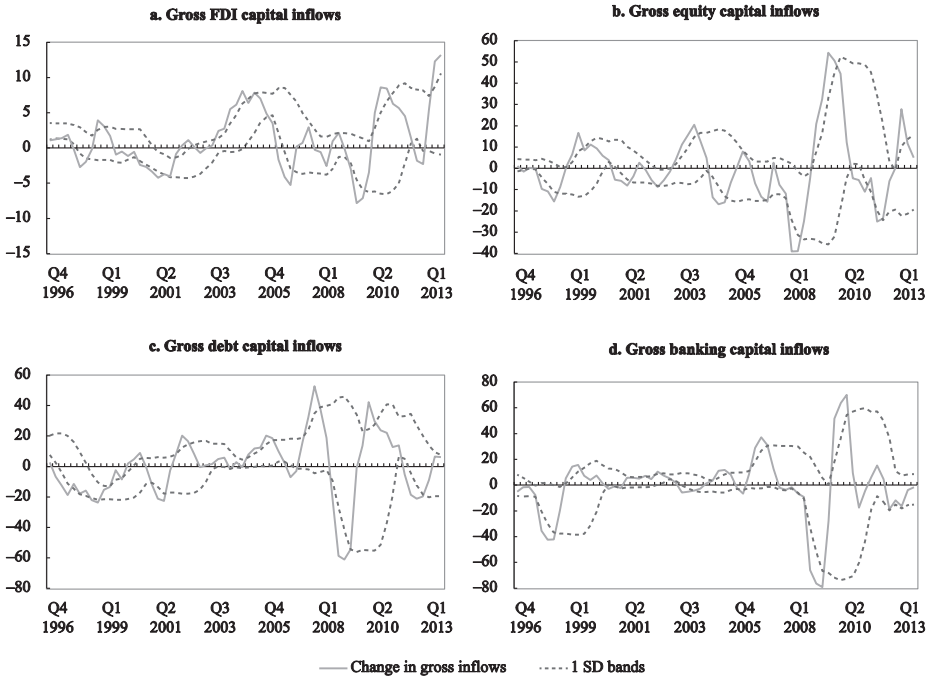
Debt-led (excluding banking flows): Q1 1998–Q2 1998, Q1 2008–Q2 2008, and Q2 2012

Bank-led: Q4 1996–Q1 1997, Q3 1998–Q4 1998, Q1 2002–Q2 2002, Q4 2004–Q2 2005, Q3 2008–Q1 2009, and Q3 2012

<sup>5</sup>Forbes, K. J. and F. Warnock. 2012. Capital Flow Waves: Surges, Stops, Flight, and Retrenchment. *Journal of International Economics*. 88 (2). pp. 235–51. However, unlike their analysis, we distinguish "debt" from "bank" because the latter is more prone to deleveraging and procyclicality, and therefore it has a more direct impact on the real sector.

<sup>6</sup>We conducted similar analysis for capital outflows, which is not shown here.

Figure 4. Gross Capital Inflows in Select Emerging Asian Economies



FDI = foreign direct investment, SD = standard deviation

Notes: Computed as year-on-year change based on 4-quarter moving sum. Inflows refer to bank flows from other investments on the liabilities side (assigned a positive value); outflows refer to the asset side (assigned a negative value). Episodes are based on one SD band. Emerging Asia comprises Indonesia, the Republic of Korea, the Philippines, and Thailand.

Source: ADB calculations based on International Monetary Fund. Balance of Payments Statistics (BPM5 and BPM6). <http://data.imf.org/?sk=7A51304B-6426-40C0-83DD-CA473CA1FD52> (accessed 22 July 2013).

Clearly, the volatility of capital flows has not been uniform across Asia. It is also equally clear that debt-led and bank-led flows have been the most volatile types of capital flows.<sup>7</sup> The growing debt-led flows were boosted by the region's safe-haven status when investors shunned risky holdings like equities but at the same time sought high-risk returns (Azis and Shin 2015). The yields on traditionally safer US Treasuries and on emerging market debt moved in the same direction during the period under review. The downgrade in global growth expectations pushed local currency (LCY) bond yields lower in tandem with those in advanced economies, implying that credit risks associated with LCY emerging market bonds were significantly lower than in the past.

<sup>7</sup>Debt-led flows are facilitated by asset managers, acting presumably on behalf of investors such as pension funds and insurance companies. Their investment behavior is guided largely by risk returns and market conditions, and less by standard macro policies.

In some economies, the size and liquidity of the bond market remained relatively small, and hence prone to perturbations. This is particularly the case where limited size and liquidity is combined with a high share of foreign ownership. For example, foreign ownership of LCY bonds exceeds one-third in Indonesia and Malaysia, compared with only around 10% in the Republic of Korea and Singapore. (*Asia Bond Monitor*, various issues) Sporadic and sudden outflows, as happened in June 2013 during the so-called “taper tantrum,” can easily rattle the market and cause exchange rates to fluctuate.

In the case of bank-led flows, deleveraging by European banks contributed to volatility. As the funding conditions in Europe deteriorated toward the end of 2011, bleak economic prospects and doubts over fiscal sustainability undermined the value of sovereign and other assets. Bond issuance from banks fell, especially uncollateralized issuance in fiscally challenged economies. Outflows due to fund withdrawals surged, particularly in Italy and Spain, and exposures to a number of European Union institutions dropped sharply. At the same time, claims by US money market funds on European banks, especially French banks, fell significantly. The impact on emerging East Asia was felt in terms of a shrinking number of consolidated loans, new syndicated loans, and large bilateral loans from European Union banking groups during the third quarter of 2011.<sup>8</sup> The terms on new loans to corporations and households were also tightened. As a result, gross outflows from emerging East Asia rose toward the end of 2011 and gross inflows declined.

Beginning in 2012, signs emerged that non-European banks and bond market investors were compensating for the pullback from European banks, albeit not entirely, especially in trade finance. Japanese banks filled part of the gap, with their share of foreign claims remaining stable after the GFC (Figure 5). Cross-border lending to Asia from banks based in Australia; the Republic of Korea; and Taipei, China also increased; as did lending from banks in the United Kingdom and the US (Table 1).<sup>9</sup> Combined with the decelerated speed of European deleveraging, this led to a reversal in net flows by the end of 2012. Nonetheless, the volatility of bank-led flows increased during the period under review.

### III. Excess Savings

Excess saving, as defined in this study, represents the difference between saving and investment viewed from the financial perspective; that is, financial assets less

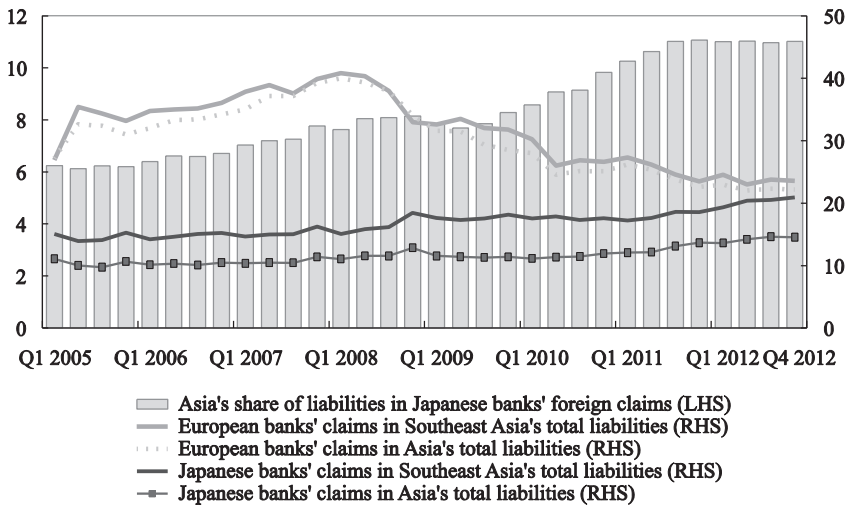
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<sup>8</sup>In contrast, lending by European banks to western Europe and other developed economies remained unchanged. In 2013, the amount of European bank lending to Asia was estimated at \$280 billion, compared with \$374 billion before the GFC.

<sup>9</sup>An increasingly important part of bank financing, however, remains unidentified. This is likely due to the absence of data from key economies, especially the PRC; Hong Kong, China; and Singapore.



Figure 5. Japanese and European Banks' Foreign Claims in Asia  
(% of total claims)



LHS = left-hand side, RHS = right-hand side.

Notes:

1. European banks (excluding banks in the United Kingdom) based on Bank for International Settlements (BIS) definition.
2. Asia excludes Australia, Japan, and New Zealand due to differences in the structure of their economies with the rest of Asia.
3. Total foreign claims of banks from 22 BIS reporting economies.

Source: ADB calculations based on Bank for International Settlements. Table 9D: Consolidated Foreign Claims of Reporting Banks—Total Risk Basis. <http://www.bis.org/statistics/consstats.htm> (accessed on 11 July 2013).

financial liabilities. Excess saving refers to net lending (borrowing) from the capital accounts perspective and net financing from the financial accounts perspective.

A typical FOF summary matrix presents two accounts: the capital account and the financial account. The capital account comprises (i) gross saving and capital transfers, and (ii) capital accumulation. Taking the difference between the two yields net lending if saving is in excess of investment, or net borrowing if investment overshoots saving. In financial terms, this figure is referred to as net financing. Under the financial account, net financing is shown as the difference between the net acquisition of financial assets (uses of funds) and net incurrence of liabilities (sources of funds) and is broken down into key instruments. The first level of disaggregation includes between eight and 10 instruments, with the core instruments comprising currency and deposits, securities other than shares, loans, shares and other securities, and accounts receivable and payable. This breakdown is presented for each economic agent in the domestic sector—nonfinancial corporations, financial corporations, the general government, and households—and the rest of the world. See Appendix 1 for a sample FOF matrix.

Table 1. **Exposure to European, Japanese, and US Banks in Asia**  
(as of December 2012, % of borrower's domestic credit)

Borrower	Lender							
	US Banks	Japanese Banks	Total	European Banks				Rest of Europe
				France	Germany	UK	GIIPS	
<b>Asia</b>	2.2	2.7	4.4	0.5	0.4	2.6	0.1	0.7
Japan	1.8	na	1.8	0.4	0.2	0.6	0.0	0.2
<b>Developing Asia</b>	2.5	2.7	7.4	0.7	0.6	4.9	0.1	1.2
<b>ASEAN-4 + Viet Nam</b>	3.6	4.8	9.2	...	0.9	6.1	0.1	2.2
Indonesia	4.3	5.3	11.5	...	1.6	6.2	0.1	3.6
Malaysia	5.1	3.8	15.5	...	1.1	12.4	0.1	2.0
Philippines	7.1	3.8	13.0	...	1.1	7.9	0.2	3.8
Thailand	2.1	6.0	3.6	...	0.4	2.2	0.0	0.9
Viet Nam	1.1	2.4	7.1	...	1.0	3.1	0.1	3.0
<b>NIEs</b>	8.9	11.7	28.8	2.4	1.6	20.0	0.3	4.4
Hong Kong, China	10.0	31.6	71.4	3.9	2.3	57.4	1.0	6.8
Republic of Korea	7.9	4.4	12.4	1.6	1.1	7.6	0.1	1.9
Singapore	19.9	18.6	65.9	6.9	5.4	34.8	0.5	18.3
Taipei, China	5.5	6.5	9.8	0.8	0.5	7.1	0.0	1.4
People's Republic of China	0.6	0.5	1.9	0.2	0.2	1.1	0.1	0.3
India	10.5	7.7	20.0	2.0	3.1	11.1	0.3	3.5
United States	na	3.6	9.8	0.3	1.5	3.0	0.7	3.2
Eurozone	3.6	2.5	26.4	5.6	4.8	4.8	4.0	7.1

... = data not available; ASEAN = Association of Southeast Asian Nations; GIIPS = Greece, Ireland, Italy, Portugal, Spain; na = not applicable; NIEs = newly industrialized economies; UK = United Kingdom; US = United States.

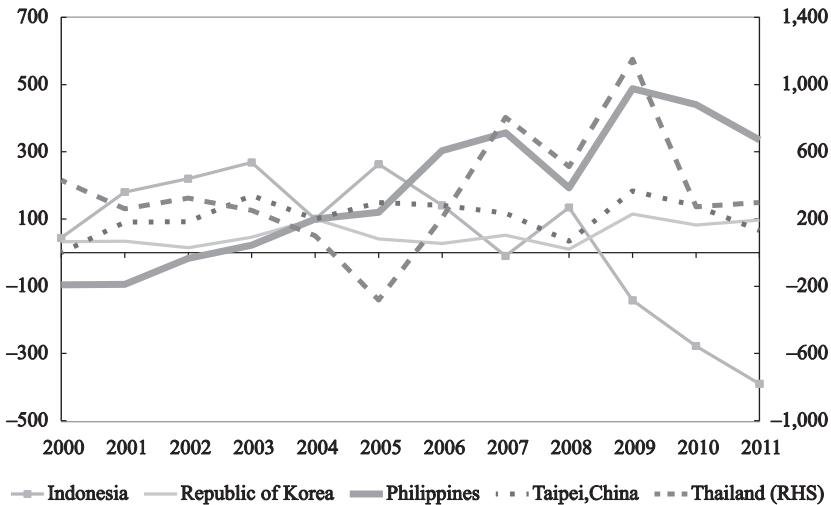
Notes: Eurozone comprises Austria, Belgium, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Malta, the Netherlands, Portugal, Slovakia, Slovenia, and Spain. Highlighted cells imply an increase in exposure compared with September 2008 in terms of domestic credit percentage value greater than \$100 million. Domestic credit or domestic claims based on IMF definition of international financial statistics.

Source: ADB calculations based on Bank for International Settlements. Table 9D: Consolidated Foreign Claims of Reporting Banks—Total Risk Basis. <http://www.bis.org/statistics/consstats.htm> and CEIC (accessed on 15 July 2013).

In this section, we assess the changing trends and characteristics of excess savings in the pre-GFC (2000–2007) and GFC (2008–2011) periods in Indonesia; the Republic of Korea; the Philippines; Taipei, China; and Thailand.<sup>10</sup> A graphical presentation is used to match assets and liabilities by instrument for each of the three

<sup>10</sup>A survey of official websites for each economy was made to determine the availability of data that conform to the standard format of the FOF matrix. To enable a cross-economy comparison, the availability of annual data from 2000 to 2011 as well as a cross-section of financial instruments by sector was factored into the selection of economies.

Figure 6. **Excess Saving Index**  
(2004 = 100)



RHS = right-hand side.

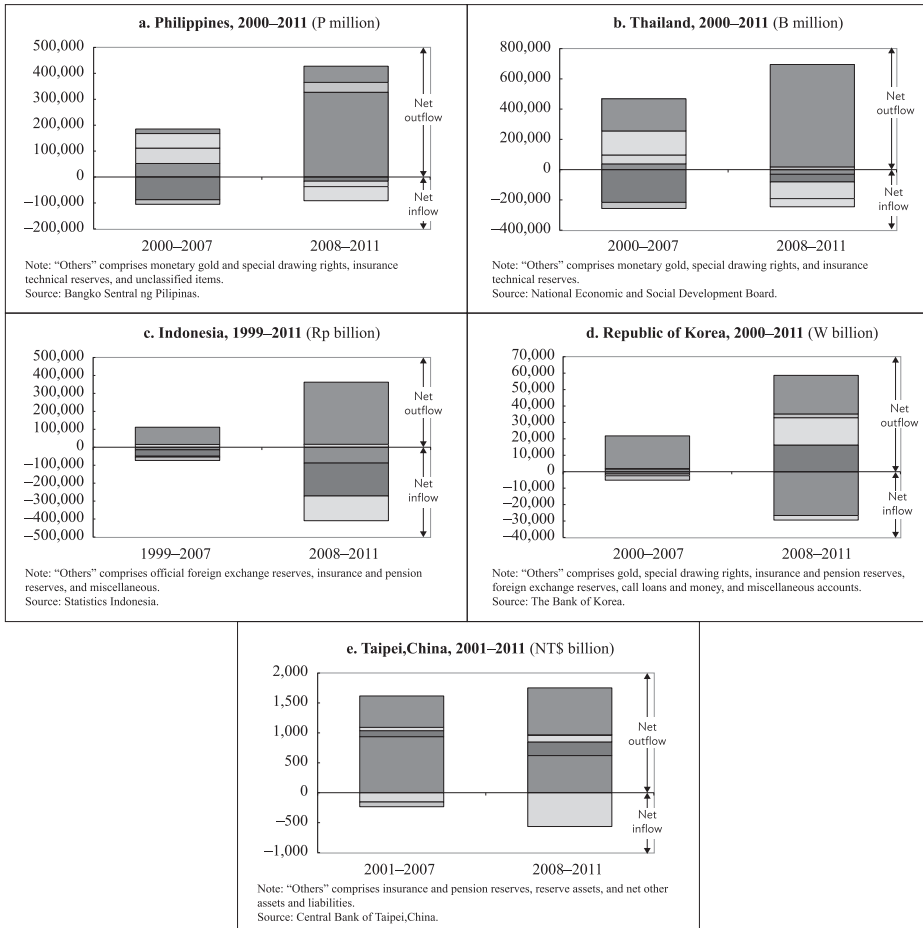
Sources: Bangko Sentral ng Pilipinas; The Bank of Korea; Central Bank of Taipei, China; National Economic and Social Development Board; and Statistics Indonesia.

economic agents: financial institutions, households, and nonfinancial corporations. For clarity, only five core instruments—currency and deposits, securities other than shares, loans, shares and other securities, and accounts receivable and payable—are shown. The rest are lumped under the grouping “others.”

Some Asian economies experienced a sharp increase in excess savings during the second half of the 2000s (Figure 6). This was most evident in the case of the Philippines and Thailand. An exception to this trend was Indonesia, which had a deficit during this period.

Even at the aggregate level, a change in the composition of excess saving is evident. Figure 7 presents the decomposition of excess saving by instrument (e.g., accounts receivable less accounts payable) for the same five economies during the pre-GFC and GFC periods. As negative excess saving corresponds to a net inflow from the rest of the world, the bars below the x-axis represent a net inflow of the instrument and those above the x-axis represent a net outflow. It is clear from the comparison of the bars that the composition of excess savings changed between the two periods in all five economies. For example, prior to the GFC, currency and deposits, loans, and securities equally contributed to the Philippines’ outflows. During the GFC, outflows from the Philippines were largely in the form of securities. In terms of net inflows, loans increased for Indonesia, the Philippines, and Thailand during the GFC, while the net outflow of loans and equities increased for the Republic

Figure 7. Excess Saving by Instrument



of Korea and Taipei, China. In short, there was a significant change in the level and the composition of excess savings between the pre-GFC and GFC periods.

One of the interesting phenomena in Asia in the aftermath of the AFC was the surge in corporate savings.<sup>11</sup> Asia's corporate excess saving, while now declining, was higher than in any other region following the AFC. This has attracted the attention of analysts because they see it as having contributed to excess saving. Some even used the term "saving glut" and argued that this has been the reason behind global imbalances (see, for example, Bernanke 2005). Looking at the examples

<sup>11</sup>Cardarelli and Ueda (2006) provide insights on the phenomenon of rising corporate savings, defined as the difference between undistributed profits (gross saving) and capital spending, in the context of developed economies.

of Indonesia, the Republic of Korea, and the Philippines, corporate saving surged after the AFC, and did so rather dramatically in Indonesia. (The saving trend of different agents in each economy is displayed in Appendix 2.) An International Monetary Fund report raised this issue to argue that at the same time Asia's corporate investment stagnated, household saving did not provide enough of an offsetting trend to lead to an increase in national saving (Jain-Chandra, Nabar, and Porter 2009).<sup>12</sup>

A careful look at more recent FOF data, however, gives a rather different picture. It is true that corporate saving rose, but corporate investment has also increased since the mid-2000s. Even during the GFC, corporate investment in Indonesia continued to rise. It fell in 2009 in the Republic of Korea and the Philippines, before rising again. As a result, the excess saving (or net saving) of the corporate sector actually went down. Furthermore, the fall in corporate excess saving in Asia has been compensated by relatively high—and increasing in some economies—household excess saving, especially after the GFC.

Numerous studies have sought to identify the determinants of corporate excess saving. Factors specific to firms and economies seem to matter the most, ranging from high profitability and relatively low capital spending and dividends, to an underfunded corporate pension fund. But some macro indicators also continue to play a role such as output growth, interest rates, taxes and subsidies, and current account balance. To the extent the act of saving generally reflects anticipated risks, any conditions considered as reducing risk will lower the need for the corporate sector to save. This explains why higher levels of government saving, perceived as lowering risk to the economy, can be associated with lower levels of corporate saving as government saving crowds out private saving (Ricardian Equivalence). The extent of the relation, however, depends on the fiscal policies taken (see, for example, Corbo and Schmidt-Hebbel 1991).<sup>13</sup>

Another determining factor important to our study relates to the changed behavior of the corporate sector. For example, Cardarelli and Ueda (2006) found that one of the main drivers of the corporate sector's excess saving is the preference for investment in equities and cash rather than capital goods. This suggests the importance of an incentive system to invest in the real sector rather than in financial assets. To what extent was such a change in preferences present among economic agents after the GFC?

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<sup>12</sup>Jain-Chandra, S., M. Nabar, and N. Porter. 2009. Corporate Savings and Rebalancing in Asia. In S. Culhane and M. Bonilla, eds. *Regional Economic Outlook: Asia and the Pacific October 2009*. Washington: International Monetary Fund.

<sup>13</sup>In the PRC, rising corporate saving resulted from low interest rates, falling labor costs, and growing output prices that significantly increased the profitability of state-owned and private enterprises. Higher firm-level uncertainty and the underfunding of company pensions also encouraged larger cash holdings and debt repayment. State subsidies and low dividend payout ratios further increased corporate saving in the PRC. In the case of India, GDP growth was found to be a strong determinant of corporate saving. Additional factors that drive up corporate savings are preferential tax treatment, subsidies, and access to capital (Asian Development Bank 2009).

#### IV. Agent Preferences

The analysis of excess saving in the preceding section conceals the differences among economic agents. In particular, it did not reveal the change in agent preferences toward sources of fund (liabilities side) and uses of fund (assets side). This is what we intend to focus on in this section.

We begin with the household sector. On the liability side, except for Taipei,China, household loans rose significantly during the GFC in all five economies under review. In the case of Indonesia, the Philippines, and Thailand, household loans more than doubled relative to their amount in the pre-GFC period. On the asset side, household preferences toward currency and deposits (except in Taipei,China) and equity increased. The rise of household investment in equity markets was particularly high in Thailand and the Philippines; it was far higher than investment in less-risky securities such as the bond market. It is also notable that in all cases the increase of total listed items in household assets after the GFC was far greater than the increase of those in household liabilities. (See Appendix 3 for a graphical representation.)

Due to the rising household preference for liquidity, banks generally benefited through expanding deposit bases as reflected in the rise of liabilities in currency and deposits. Aside from the increase in cash and deposits, there were also increases in noncore sources of funds in the finance sector. These particular components capture capital flows intermediated by financial institutions as evidenced by the increasing share of noncore liabilities. They also reflect changes in the wholesale funding market. In the Philippines and Thailand, the contribution of other accounts payable and securities increased after the GFC. The Republic of Korea experienced an increase in the share of equities, while Indonesia saw a rise in the share of loans and equities. Taipei,China's noncore liabilities remained fixed and its core sources of funds rose.

Easy money inevitably also affects how assets are held. Apart from ensuring greater liquidity, as indicated by rising currency and deposits, massive inflows also entered the region's capital markets, including bond markets. With improved liquidity, the holding of securities by financial institutions in the Republic of Korea, the Philippines, and Taipei,China increased. In Indonesia and Thailand, financial institutions increased their issuance of loans and accounts receivable. Trends in the composition of assets and liabilities of financial institutions in each of the five economies under review are shown in Appendix 4.

The impact also extended to the corporate sector, where increased pension reserves were detected. The trends in and composition of financial assets and liabilities of the corporate sector are displayed in Appendix 5. Securities markets served as the main conduit in the Republic of Korea as the value of securities rose significantly between the pre-GFC and GFC periods. The value of securities also increased in the other economies, although the increase was far less than the rise in equity issuance

for Thailand; Indonesia; and Taipei, China. Bank loans in these three economies and the Philippines rose by an even larger proportion.

On the asset side, apart from the higher allotment for liquidity, which is a common stance among economic agents during a crisis, corporate portfolios shifted toward equities in all five economies. In addition, accounts receivable and loans rose (quite dramatically) in the Philippines. Other items constituted the largest increase in Indonesia's corporate sector, including foreign exchange reserves, insurance and pension reserves, and miscellaneous accounts.

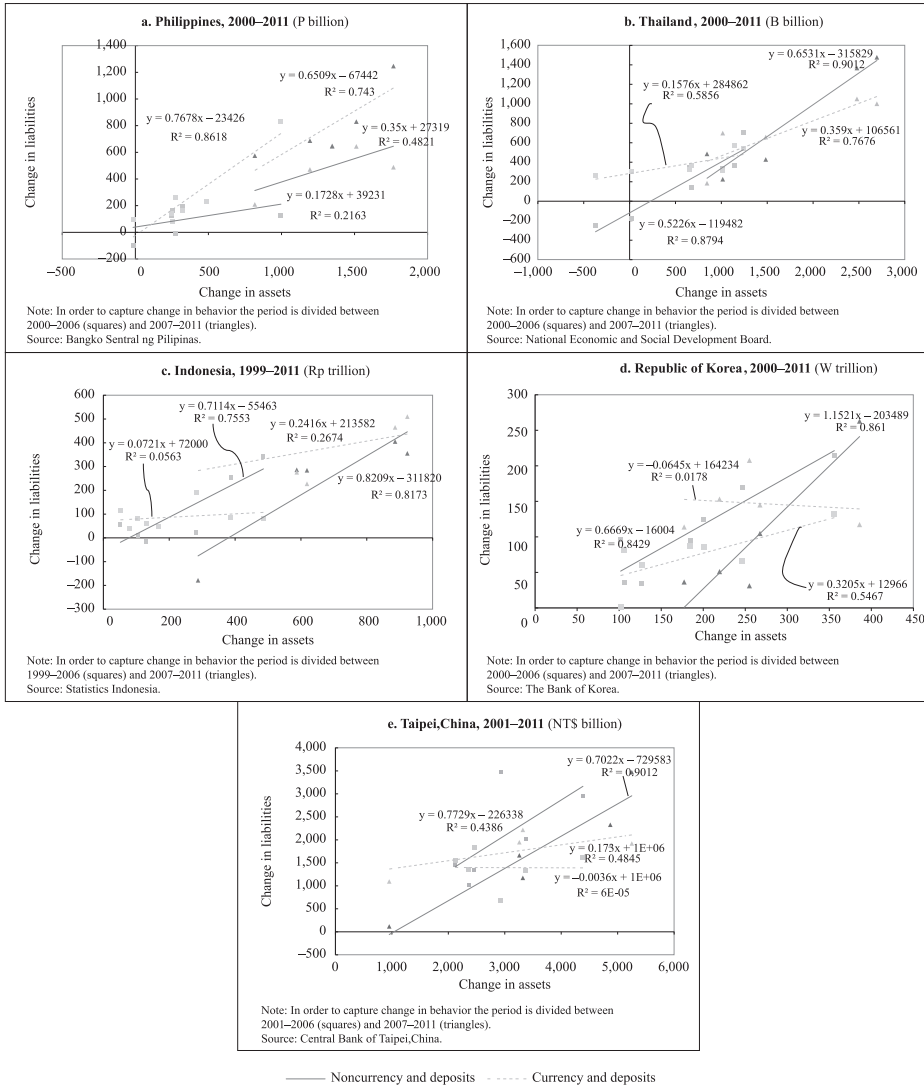
Given the above trends, to what extent did the behavior of households, financial institutions, and the nonfinancial corporate sector reflect their perceptions of risk? In order to determine shifts in investment behavior, we plot each agent's assets and liabilities in a scatter graph with changes in assets in one axis and changes in liabilities in the other. We compare 2000–2006 to reflect the pre-GFC (depicted by squares) and 2007–2011 for the GFC period (depicted by triangles) and fitted the trendline with the corresponding regression equation for core and noncore instruments.<sup>14</sup> The scatterplot includes four trendlines: core instrument pre-GFC, core instrument GFC, noncore instrument pre-GFC, and noncore instrument GFC. The trends for noncore instruments are traced in solid lines and those for core instruments are traced in broken lines. By comparing these trendlines, we aim to capture the nature and extent of the changing response of liabilities and assets with respect to one another. For example, if the line for noncore financial instruments becomes steeper or has a bigger slope, it reflects a shift in preferences toward noncore financial instruments relative to traditional (core) financial instruments. This can be interpreted as a preference toward greater risk-taking behavior. Conversely, more conservative behavior is reflected when the line is flatter or has a smaller slope.

We present two sets of graphs for each economic agent. The first set is for liabilities as shown in Figures 8 and 9. The change in liabilities is shown on the y-axis and the change in assets on the x-axis (the correlation of liabilities with total assets across the two types of instruments). These figures have been constructed to capture movements in the source of funds, with the following question in mind: which type of liabilities moved in sync with changes in assets? The second set is for assets as shown in Figures 10 and 11. The change in assets is shown on the y-axis and change in noncore liabilities on the x-axis (correlation of assets with noncore liabilities across different asset instruments). These figures are aimed at capturing changes in the use of funds for every change in noncore liabilities. Take for example the case of the household sector. As discussed earlier and depicted in Appendix 3, loans were the dominant source of funds for households during both periods. As depicted by the dotted lines in the figures in Appendix 6, in the Republic of

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<sup>14</sup>As we need to capture changes in agent behavior (slope changes) between the pre-GFC and GFC periods, we include a normal year from both periods. The first year of the pre-GFC period for Indonesia is 1999 and for Taipei, China it is 2001.

Figure 8. Financial Institutions' Liabilities

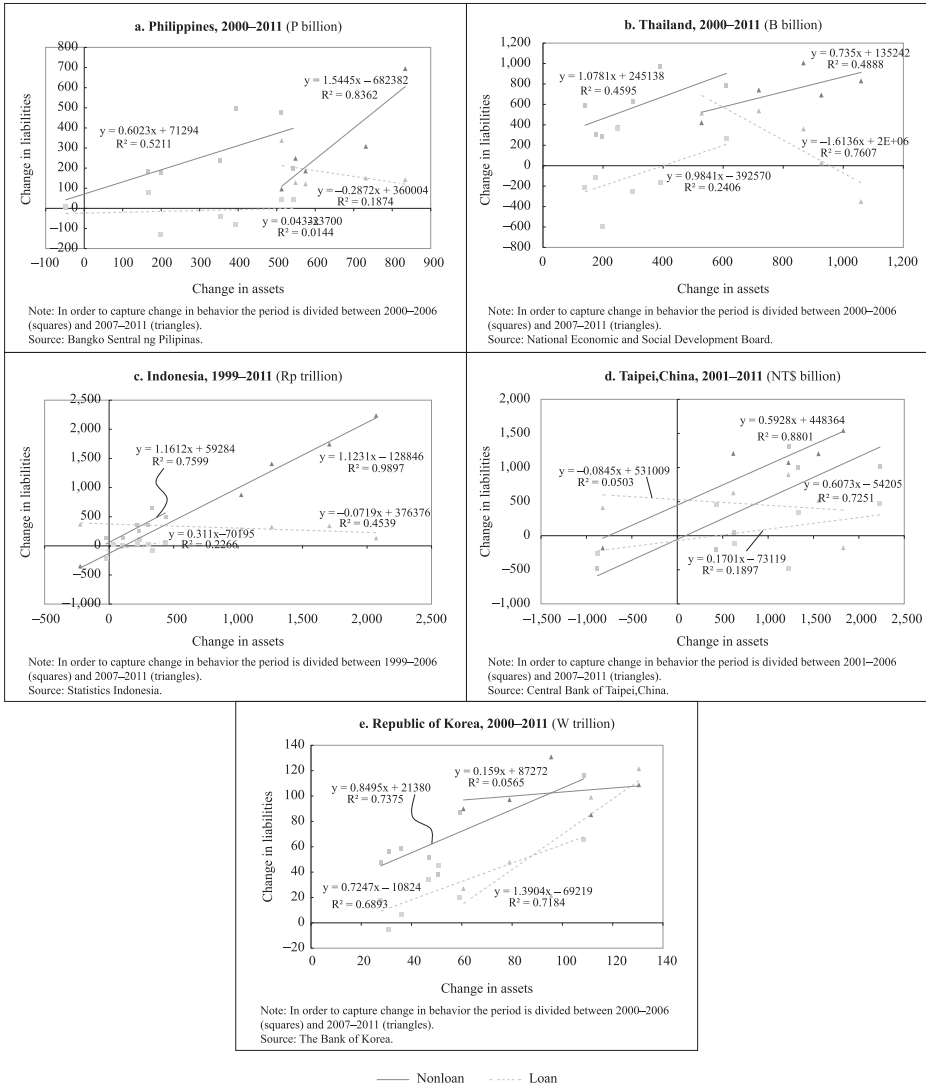


Korea, the slope for both loan and nonloan liabilities clearly shrunk between the two periods.<sup>15</sup> This was not the case in other economies, where the slope for nonloan

<sup>15</sup>Household debt is a particularly important issue for the Republic of Korea since the global financial crisis. Debt reached 146% of household disposable income at the end of 2007. Following the crisis, the household debt ratio increased further to 164% at the end of 2012, well above the OECD average of 133% (OECD 2014). Prior to the GFC, household debt rose nearly in sync with every change in total assets as household assets were almost completely financed through loans.



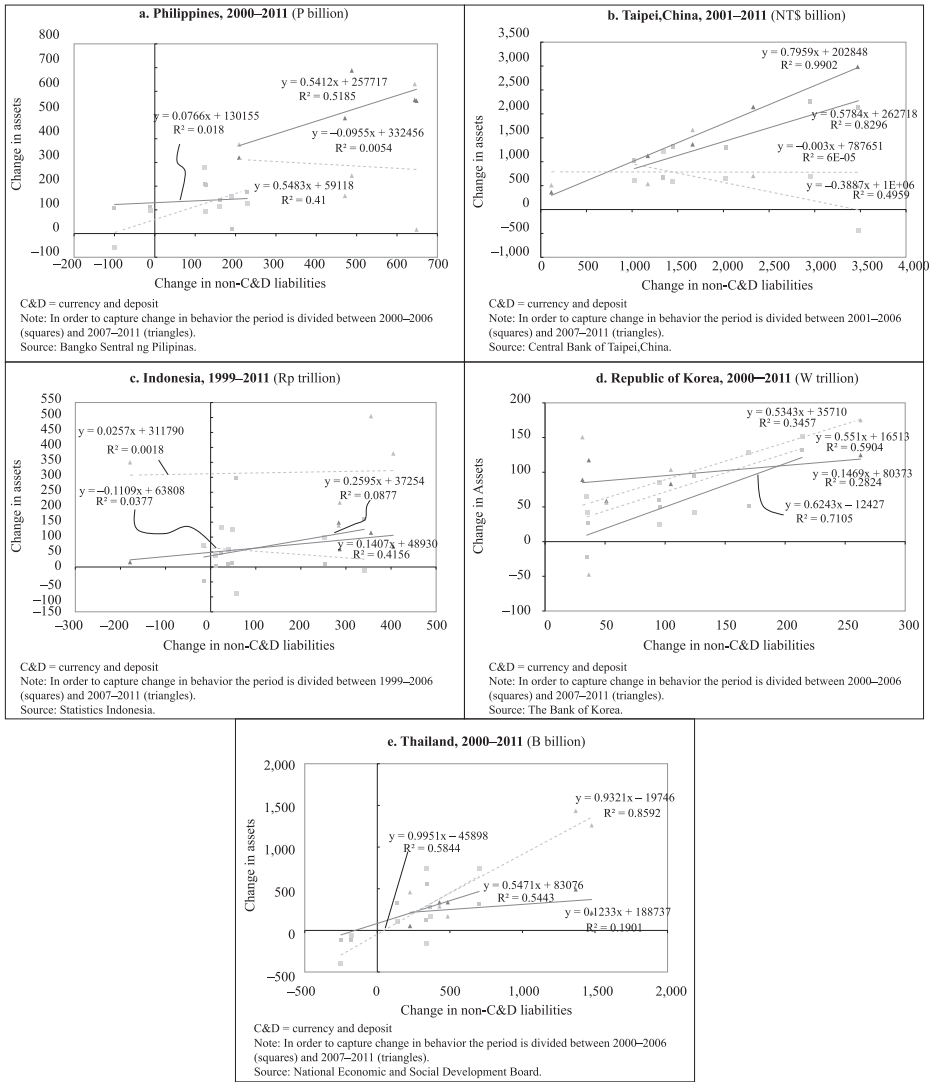
Figure 9. Nonfinancial Corporate Liabilities



(noncore) liabilities increased; that is, the comovement of noncore liabilities with assets strengthened in 2007–2011.

A clearer sign of behavior changes occurred in financial institutions and the nonfinancial corporate sector. The marginal response of noncore liabilities to changes in total assets was even more pronounced than in the case of households. Except for the Philippines, financial institutions’ noncore liabilities generally moved more in sync with changes in total assets than did their core liabilities (currency and deposits). This is evidenced by the steeper slopes for noncurrency and deposit

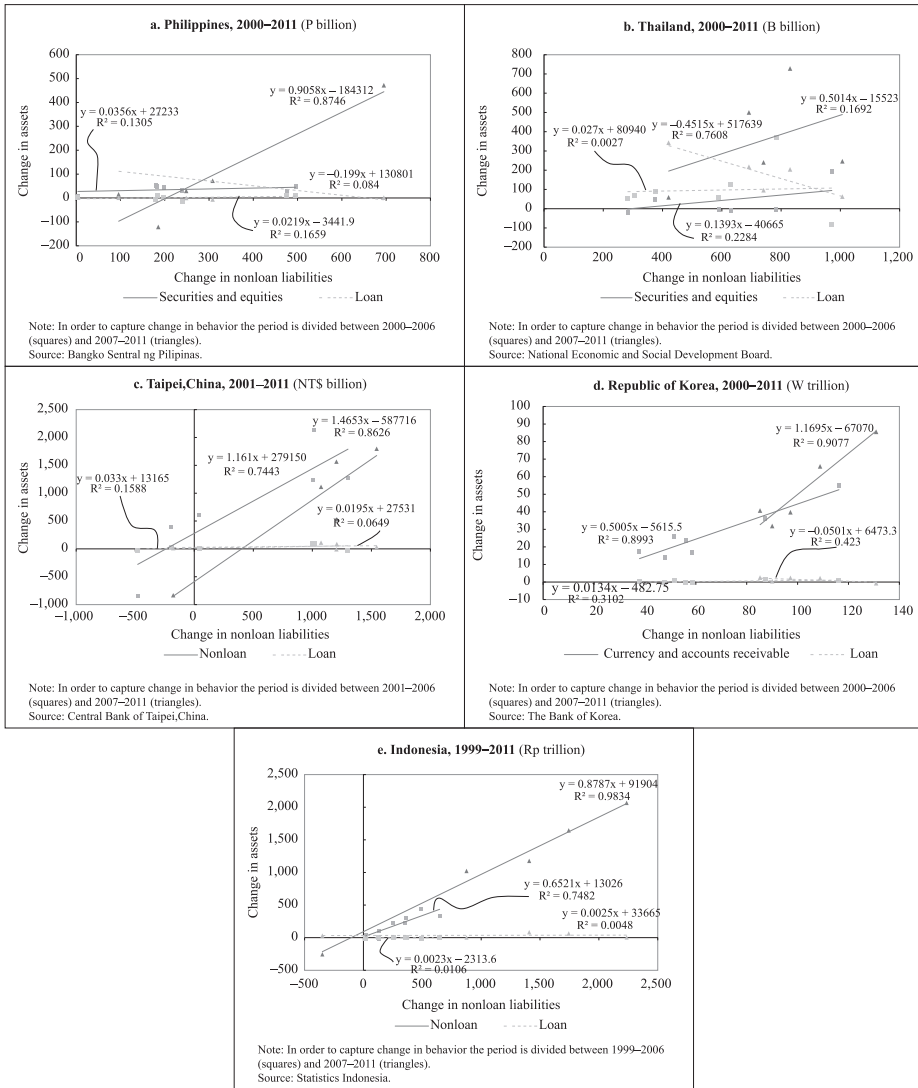
Figure 10. Financial Institutions Assets



liabilities compared with currency and deposit liabilities. Meanwhile, the marginal response of noncurrency and deposit liabilities to total assets increased during the GFC in Indonesia, the Republic of Korea, the Philippines, and Thailand (Figure 8).

In the corporate sector, the slope of loan liabilities turned negative during the GFC in Indonesia; the Philippines; Taipei, China; and Thailand. On the other hand, the marginal response of nonloan liabilities continued to be higher than that of loans in all of the economies under review except the Republic of Korea (Figure 9).

Figure 11. Nonfinancial Corporate Assets



It is clear from Appendix 6 and Figures 8 and 9 that, in general, the expanding assets of financial institutions and the corporate sector during the periods of observation were spurred by a surge in noncore liabilities. The subsequent question is as follows: how much did those noncore liabilities drive noncore assets? The answer is that different patterns emerge across different agents.

Households tend to hold traditional and liquid assets like currency and deposits. This was indeed the case in the Republic of Korea and Thailand during

the periods under review. Households in these economies reduced investments in securities and equities as loan liabilities rose, and instead increased their liquidity multifold. The elasticity of securities and equities, on the other hand, increased for households in Indonesia; the Philippines; and Taipei, China (Appendix 7).

Two opposite patterns emerged among financial institutions in terms of their response to increasing funds from nontraditional sources: (i) increased lending and (ii) increased investment in securities and equities. Rising noncurrency and deposit liabilities of financial institutions were associated more with higher levels of investments in securities and equities in the Philippines and Taipei, China. This trend intensified during the GFC. Bank loans were unresponsive to increases in noncore liabilities in these economies. In the case of Indonesia, the finance sector continued to prefer investing in securities rather than loans for every increase in liabilities, although the degree of preference declined after the GFC. In contrast, higher bank lending accompanied increases in noncore liabilities in the Republic of Korea and Thailand, with slopes of 0.5 and 0.9 for the pre-GFC and GFC periods, respectively (Figure 10). In these economies, the marginal response of noncore assets, particularly securities and equities, fell in 2007–2011.

Faced with the same increase in funds from nontraditional sources, firms in the Philippines and Thailand invested more in securities and equities, significantly raising the marginal response to changes in noncore liabilities. Korean firms increased their issuance of accounts receivable and held more currency (Figure 11). While no particular instrument drove changes in the asset holdings of firms in Indonesia or Taipei, China, the marginal response of total nonloan assets to noncore corporate liabilities increased in both economies. (Nonloan assets include currency and deposits, securities, equities, accounts receivable, and other miscellaneous instruments.)

Table 2 presents an overall summary of the results. It is clear that the region's abundant liquidity associated with excess saving and capital inflows have had an impact on agents' risk-taking behavior. As agents expanded their balance sheets, enabled by funds raised at relatively low costs, they tended to diversify their asset holdings toward risky investments.

## V. Macrofinancial Risks

It is well-known that capital flows can be beneficial to recipient economies. But their volatile pattern and procyclicality can also act as a channel for the build-up of financial risks and imbalances. A large increase in highly volatile debt-led flows and bank-led flows, as described in the preceding sections, poses a difficult challenge for policy makers seeking to maintain macrofinancial stability.

Bank-led flows alter the size and composition of banks' balance sheets such that the risks of a banking crisis increase. On the asset side, loan-to-value ratios grow quickly amid excessive credit expansion and other forms of risky investment,

Table 2. Behavior of Economic Agents in Response to Changes in Financial Flows

	Preferences Toward Different Sources of Liabilities		Response of Assets to Increases in Noncore Liabilities	
Households	Pre-GFC Loan	Post-GFC Loan	Pre-GFC C&D	Post-GFC C&D
	$>$	$= \downarrow$	$>$	$\uparrow$ except for Indonesia and Taipei, China
	Pre-GFC Nonloan <sup>a</sup>	Post-GFC Nonloan	Pre-GFC Securities and SOE except for the Republic of Korea and the Philippines	Post-GFC Securities and SOE except for Taipei, China
	$>$	$= \uparrow$ except for the Republic of Korea and Taipei, China	$>$	$\geq$
	Loans still dominate but this preference is tapering across all economies, while the preference for nonloans is rising and in some cases surpassing loans.		C&D is still the preferred asset but a preference for securities and SOE is rising.	
Financial Institutions	Pre-GFC C&D	Post-GFC C&D	Pre-GFC Loan	Post-GFC Loan
	$<$	$\uparrow$ except for the Republic of Korea, the Philippines	$\leq$	$= \uparrow$ for Indonesia, Republic of Korea; Thailand
	Pre-GFC Non-C&D	Post-GFC Non-C&D	Pre-GFC Securities and SOE except for the Philippines, Thailand	Post-GFC Securities and SOE except for the Republic of Korea, Thailand
	$<$	$= \uparrow$	$\leq$	$\uparrow$ for the Philippines; Taipei, China
	All economies showed an increase in the preference for nondeposit sources of funds.		Two patterns emerged in response to an increase in noncore liabilities: (i) increased preference for securities and SOEs, and a decline in loans in the Philippines and Taipei, China; and (ii) increased preference for bank lending and a decline in securities and SOEs in Indonesia, the Republic of Korea, and Thailand.	

*Continued.*

Table 2. *Continued.*

Preferences Toward Different Sources of Liabilities		Response of Assets to Increases in Noncore Liabilities	
Corporations	Pre-GFC Loan	Post-GFC Loan	Post-GFC Loan
	$\leq$	$<$	$\Rightarrow \downarrow$
	Pre-GFC Nonloan	Post-GFC Nonloan	Post-GFC Nonloan <sup>b</sup>
	$\leq$	$<$	$\uparrow$
	↓ except for the Republic of Korea = ↑ except for the Republic of Korea and Thailand except for the Republic of Korea		
	Preference for loans is on a decline while preference for nonloan liabilities is increasing although slightly tapering		
	Clear preference for nonloan assets and it is getting stronger (accelerating)		

C&D = currency and deposits, GFC = global financial crisis, SOE = shares and other equities.

<sup>a</sup>No pre-GFC data on nonloan liabilities for the Philippines.

<sup>b</sup>Securities and SOE for the Philippines and Thailand; currency and accounts receivable for the Republic of Korea.

Notes: In comparing elasticity of instruments,  $\leq$  or  $\geq$  is used if the difference is within  $\pm 10$  percentage points. Wider gap in elasticities between type of instruments is signified by  $<$  or  $>$  (strict inequality). The same approach is used in comparing elasticities between periods, = is added if the change in elasticity is within  $\pm 10$  percentage points. Therefore,  $\downarrow$  or  $\uparrow$  signify a stronger decrease or increase in elasticity between the pre-GFC and GFC periods.

Source: Authors.

while on the liability side an increase in noncore liabilities through bank-led flows heightens banks' risky behavior and increases leverage. In times of external shock, such as deleveraging by eurozone banks and the normalization of US monetary policy, flows of bank credit can also be disrupted. With a stronger currency as a result of capital inflows, banks are willing to take even greater risks by extending more credit as the balance sheet positions of its borrowers improve.<sup>16</sup> These risks are very relevant for emerging East Asia because the region is bank-dependent with a relatively open capital account and the banks' leverage tends to exceed cyclical norms. Indeed, data show that the growth of bank credit in emerging East Asia since the GFC has exceeded the long-term trend. A significant portion of this rapid growth of credit went to the property and housing sector. The resulting increase in prices in this sector exposed the region to the risk of a bubble forming and subsequently bursting.

Using quarterly data from banks' balance sheets in 10 emerging East Asian economies, we test the role of rising noncore liabilities in spurring credit growth by using a credit channel model that incorporates the financial structure of lenders and borrowers to account for asymmetric information and the microbehavior of agents.<sup>17</sup> Given the phenomenon of financialization during a period of massive capital inflows, in which firms also act as lenders to other firms, friction in the credit market is likely to amplify, propagating real and nominal shocks to the economy (Stiglitz and Greenwald 2003).<sup>18</sup> The sensitivity of credit to the net worth of lenders is higher if agency costs associated with asymmetric information are present, in which case the effectiveness of monetary policy tends to be more limited. Has this been the case in emerging East Asia?

Table 3 shows that the growth of credit is influenced by changes in the net worth of lenders (Model 1) and lenders and borrowers (Model 2). The notion that earnings from higher bond yields may crowd out credit is tested in Model 3, where the sign of the coefficient is as expected but not significant. Only after controlling for these variables are the noncore liabilities included to see their contribution to credit growth. The results clearly point to the significant role of noncore liabilities in spurring credit growth.

In Model 2, we include the net worth of corporate borrowers and changes in the share of bond holdings among total bank assets.<sup>19</sup> The two variables have

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<sup>16</sup>The amplified effect of cross-border flows on the supply of credit due to the changing risk behavior of banks is shown in Bruno and Shin (2012), and Azis and Shin (2015).

<sup>17</sup>The economies included are the PRC; Hong Kong, China; Indonesia; Japan; the Republic of Korea; Malaysia; the Philippines; Singapore; Taipei, China; and Thailand. The credit channel hypothesis was discussed in detail in Bernanke, Gertler, and Gilchrist (1996, 1999); Adrian and Shin (2009); Stiglitz and Greenwald (2003); and Stiglitz (2001).

<sup>18</sup>A firm's depressed collateral value due to falling asset prices, or the worsening of a firm's balance sheet caused by a double mismatch in the firm's leverage, can raise the agency costs imposed by asymmetric information between borrowers and lenders.

<sup>19</sup>Banks tend to accumulate government bonds to comply with capital adequacy ratio requirements, which are designed to reduce risk, even though it may limit their capacity to lend.

Table 3. **Determinants of Credit Growth: Role of Noncore Liabilities**

<b>Independent Variables</b>	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>
GDP growth	0.065** (1.97)	0.0826** (2.26)	0.026 (0.84)
Change in banks' net worth <sub>t-1</sub>	0.042** (2.15)	0.049** (2.24)	0.054*** (2.95)
Change in nominal interest rates <sub>t-1</sub>	-0.728*** (-2.62)	-0.976*** (-3.12)	-1.348*** (-4.10)
Change in noncore liabilities <sub>t-1</sub>	0.536*** (18.74)	0.625*** (20.65)	0.384*** (11.30)
Change in corporate net worth <sub>t-1</sub>	na	0.018 (0.72)	na
Change in share of government bond holdings <sub>t-1</sub>	na	-0.008 (-0.48)	na
Change in government bond yields	na	na	-0.002 (-0.39)
Constant	0.042*** (5.42)	0.029*** (7.32)	0.062*** (9.09)
<b>R-squared</b>			
within	0.484	0.484	0.294
between	0.897	0.901	0.920
overall	0.613	0.613	0.551

GDP = gross domestic product, na = not applicable.

Notes: z-values in parentheses. \*\*\* = significant at 1%, \*\* = significant at 5%, \* = significant at 10% level.

Source: Authors' calculations.

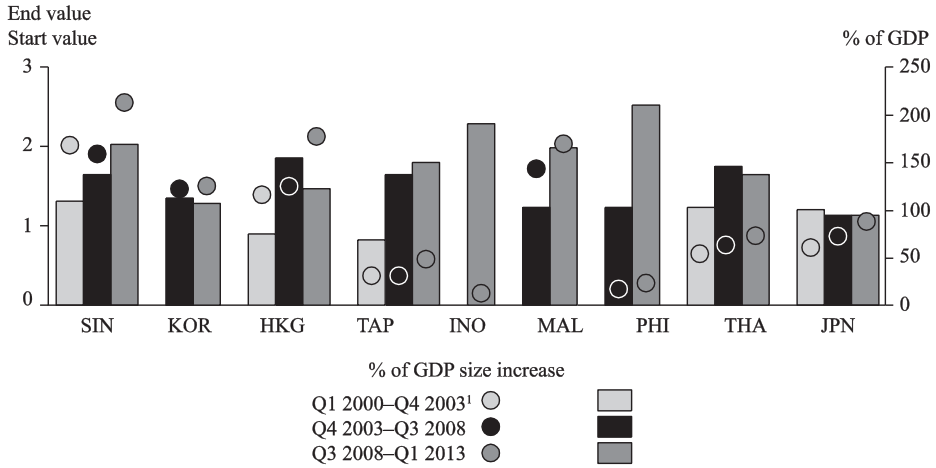
the expected signs, although neither is significant. But the coefficient of noncore liabilities is higher than in Model 1 or Model 3, and at a higher level of significance as well. Noncore liabilities clearly contribute significantly to bank credit growth.

However, credit growth may not be the best indicator of vulnerability. How credit is allocated and how it influences the effectiveness of monetary policy matters more. In particular, the growth of monetary aggregates will likely not be in sync with real sector growth if most credit is allocated to a riskier and lower-productivity sector such as real estate. Such growth can spur inflation and create asset bubbles that can propagate financial instability. Looking at the data since 2000, housing and real estate loans in some emerging East Asian economies increased during the period of rising capital inflows. The largest increases as a percentage of GDP since the onset of the GFC were in Singapore and Hong Kong, China (Figure 12).

The limited capacity of monetary policy to prevent an economy from overheating under such circumstances is well-known. But controlling credit growth through monetary policy should be more straightforward if the financing source for credit is largely bank deposits. It is when the financing sources are nondeposit and other noncore liabilities that standard policies become ineffective as financial cycles fall out of sync with domestic business cycles. A better policy should instead entail supervising and managing noncore liabilities.



Figure 12. **Housing and Real Estate Loan Increases**  
(Absolute size and % of GDP)



GDP = gross domestic product; HKG = Hong Kong, China; INO = Indonesia; JPN = Japan; KOR = Republic of Korea; PHI = Philippines; MAL = Malaysia; SIN = Singapore; TAP = Taipei, China; THA = Thailand.

Notes: Based on quarterly data. Data unavailable for the People’s Republic of China. The review period begins in Q1 2000, except for Indonesia (Q3 2010), Japan (Q4 2000), the Republic of Korea (Q4 2005), Malaysia (Q1 2006), and the Philippines (Q2 2008).

Source: Azis and Shin (2015) based on CEIC data.

To evaluate the effect of monetary policy on noncore liabilities, we run a model that directly relates interest rates with noncore liabilities. Our intention is not to capture the causal relationship of the two variables. Instead, we want to determine how bank liabilities respond to interest rates. To the extent foreign banks have a wider global network and, therefore, greater access to external financing compared with domestic banks, the following regression equation is applied separately for the 1998–2012 period:

$\text{Ln}(\text{noncore liabilities}) = \text{Ln}(\text{GDP}) + \text{policy rate}$ , where the policy rate variables include the current and the lag

After controlling for GDP growth, none of the policy rate coefficients are found to be significant (Table 4). While the GDP coefficients in all cases are significant and have the correct sign, the policy rates with and without lag are not significant despite their negative signs. Additionally, the policy rate coefficients for foreign banks’ noncore liabilities are almost zero. To the extent the effect of monetary policy is instantaneous, the case without a lag is more appropriate. Under this specification, the only policy rate coefficient that is significant and with a correct sign is for domestic banks’ core liabilities (at the 5% level), thereby confirming

Table 4. Regression Results on Policy Rates and Bank Liabilities

Independent Variables	Dependent Variable			
	Noncore Liabilities	Core Liabilities	Noncore Liabilities	Core Liabilities
	Domestic Banks		Foreign Banks	
Ln (GDP growth)	0.736*** (3.05)	0.944** (3.77)	0.446* (2.14)	0.347** (1.87)
Policy rate <sub>t-1</sub>	-0.050 (-0.64)	-0.068 (-0.98)	-0.058 (-0.83)	-0.068 (-1.12)
Policy rate <sub>t</sub>	-0.185 (-1.40)	-0.268** (-2.24)	-0.085 (-0.66)	-0.077 (-0.69)
Constant	10.289*** (4.23)	10.502*** (4.14)	11.177*** (5.38)	14.087*** (7.620)

GDP = gross domestic product.

Notes: z-values are in parentheses. \*\*\* = significant at the 1% level, \*\* = significant at the 5% level, \* = significant at the 10% level.

Source: Authors' calculations based on Azis and Shin (2015).

the limited effectiveness of standard monetary policy in containing the growth of noncore liabilities.<sup>20</sup>

These findings suggest that standard policies alone will not work. They need to be complemented by macroprudential measures to reduce the risk of financial vulnerability.

Another type of vulnerability relates to long-term financing through bond markets. To avoid a repeat of the double mismatch that led to the disastrous AFC, long-term LCY financing has been sought by policy makers in the region. In addition to reducing an overreliance on banking sources, the development of LCY bond markets can also help emerging East Asian economies establish benchmark pricing for other financial assets. More importantly for emerging East Asia, the long-term nature of bond markets is important in the context of the region's need to convert excess savings and capital inflows into productive activities such as infrastructure development. Yet, as cited earlier, in some economies with a relatively small LCY bond market the share of foreign ownership is large, leaving the market susceptible to withdrawals.

The volatility that may result from withdrawals could adversely impact market liquidity and reduce the attractiveness of the bond market, as it directly impacts investor perceptions of the collateral value of LCY bonds. Higher yields as a result of foreign withdrawals also imply higher borrowing costs, which may cause the private sector to postpone using local markets to fund new investment.

Capital inflows through bond markets may also tamper with the effectiveness of standard monetary policy. At the very least, they complicate the policy challenge.

<sup>20</sup>If interest rates are raised further, Azis and Shin (2015) show that not only will the goal remain unmet, but the risk that the financial health of banks will deteriorate due to tightened conditions will become elevated.

As the preference of agents toward securities and other risky assets tends to rise in the midst of increasing market liquidity driven by capital inflows, agents take advantage by holding more financial assets to safeguard returns. Corporate firms needing to secure long-term financing without risking a currency mismatch can raise funds. At the same time, low costs of borrowing could prompt the government to use LCY bonds for budgetary purposes.<sup>21</sup> In many emerging East Asian economies these bonds are largely held by banks, implying that the quality of a bank's balance sheet is also influenced by mark-to-market prices. In such circumstances, a tightening policy of raising interest rates could lower the price of bonds. On one hand, this could help issuing banks to raise funds inexpensively, on the other, this could lower the value of bond holdings and hurt those banks holding the securities. The net effect obviously depends on the size of bond issuance relative to bond holdings.

Figure 13 captures the trend of bond issuance and holdings in the corporate sector, including banks and nonbank financial institutions, in five emerging East Asian economies. In all cases, holdings clearly exceed issuance and the gap is fairly sizable in some economies. (For example, bond holdings in Indonesia were almost eight times bond issuance during the period under review.) Therefore, if bond prices were to fall due to higher interest rates, the asset values on corporate balance sheets could likewise deteriorate.

## VI. Conclusion

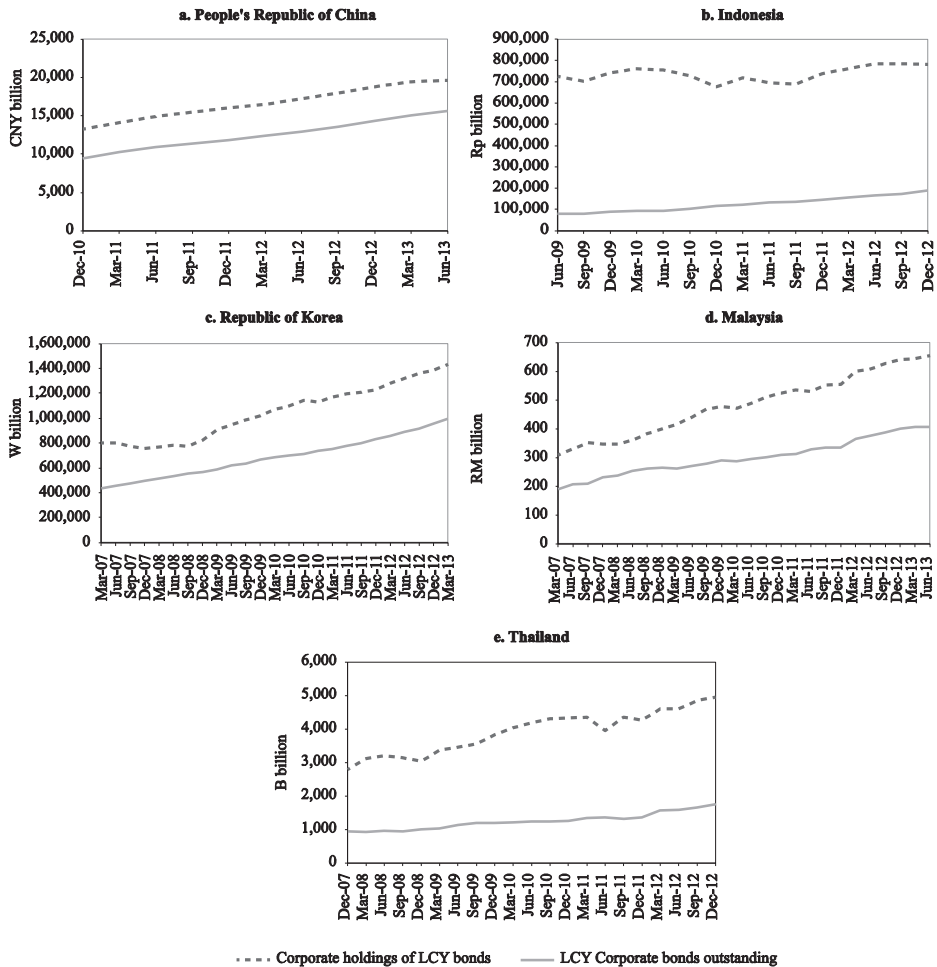
A surge of capital flows has its eternal verities. One is that it helps augment liquidity and strengthen growth. Another is that boom and bust, together with severe financial crises, are permanent features. In this paper, we study the trend and characteristics of capital inflows in the midst of excess savings as one of the important sources of growing liquidity in emerging East Asia over the last decade. The inflows were first dominated by bank-led flows that caused a surge in banks' noncore liabilities and risk-taking behavior, and in the risk of procyclicality. In the subsequent phase that followed the unprecedented quantitative easing policy in the US, global investors' search for yield brought large (debt-led) inflows into emerging East Asian capital markets, including the LCY debt market. As markets in some emerging East Asian economies were small and lacked liquidity, the funds injected by foreign capital left these markets vulnerable to flow reversals.

Bank-led flows have a substantial impact on bank-dependent Asian economies, and debt-led flows could have significant repercussions on the long-term financing for infrastructure that the region greatly needs. Yet, these two types of flows were found to be the most volatile among all capital flows, thereby undermining the region's financial stability. The difference between the recent episode of

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<sup>21</sup>As part of financial safety nets, LCY bonds were used by many emerging East Asian governments to help finance the fiscal stimulus during the GFC (see, for example, Azis 2014a).

Figure 13. LCY Corporate Bonds Outstanding and Corporate Holdings of LCY Bonds



LCY = local currency.

Notes:

1. Corporates include banks, nonbank financial institutions, and other corporate entities; and exclude government institutions, foreigners, and individuals.

2. Corporate bond holdings include holdings of both government and corporate bonds.

Source: Authors' calculations based on Azis and Shin (2015).

capital flows and the pre-1997 period before the AFC is that the more recent flows were larger in size and volatility, and occurred in the midst of excess savings.

Central to the elevated risks driven by the surge of liquidity was the change in the behavior of agents. Their preferences shifted toward riskier financial instruments. The corporate sector's preference toward securities and equities rose significantly, and amid growing noncore liquidity the finance sector tends to allocate funds to real estate loans and other risky financial assets. The search-for-yield inflows have

pushed a surge of funds into the commercial property market, sparking fears of a separate bubble. This can have economy-wide repercussions and undermine the region's financial stability.

The most recent episode of capital flows has also reduced the effectiveness of monetary policy as financial cycles fell out of sync with domestic business cycles. Simply tightening monetary policy not only failed to arrest the growth of noncore liabilities, but also risked lowering the value of securities held by banks, the largest holder of government bonds, and raising the probability of bankruptcy. This is aside from the unfavorable impact of surging inflows on income inequality discussed in Azis (2014b). From the national policy perspective, standard measures will not work. They need to be complemented by effective macroprudential measures to reduce the risk of financial vulnerability. From the global perspective, the effectiveness of global institutions to prevent authorities from taking unilateral policy actions (financial nationalism) that create negative externalities through capital flows to the rest of the world is called into question.

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**Appendix 1. Sample Flow of Funds Matrix**

Transaction Categories	Capital Account					Total Volume	
	Nonfinancial Corporation	Financial Corporation	General Government	Households <sup>a</sup>	Domestic Sectors <sup>b</sup>		
						Rest of the World	
Gross saving and capital transfers	672,488	78,419	193,626	909,814	1,854,346	-309,334	1,545,012
Saving	672,488	78,419	186,911	909,300	1,847,117	-302,105	1,545,012
Net capital transfers	0	0	6,715	514	7,229	-7,229	0
Capital accumulation	592,820	40,348	250,271	661,408	1,544,847	165	1,545,012
Gross capital formation	592,820	40,348	249,529	662,315	1,545,012	0	1,545,012
Other capital accumulation	0	0	742	-907	-165	165	0
Net lending (+) / Net borrowing (-)	79,667	38,071	-56,645	248,406	309,499	-309,499	0
	Financial Account						
Net financing <sup>c</sup>	79,667	38,071	-56,645	248,406	309,499	-309,499	0
Net acquisition of financial assets	512,648	1,512,563	273,407	642,962	2,941,579	313,399	3,254,979
Monetary gold and SDRs		-19,617			-19,617	19,617	0
Currency and deposits	28,647	238,903	-43,237	482,660	706,973	52,775	759,748
Securities, other than shares	-611	498,131	264,222	9,741	771,483	177,508	948,991
Derivatives	-517	22,301			21,784	-23,291	-1,506
Loans	764	630,874	-32,453		599,185	-27,356	571,829
Shares and other equity	16,275	43,309	806	37,626	98,016	83,230	181,246
Insurance technical reserves		-3	8	23,880	23,886	0	23,886
Other accounts receivable <sup>d</sup>	468,089	98,665	84,061		650,815	30,915	681,731
Unclassified items <sup>e</sup>	432,980	1,474,492	330,052	89,054	89,054	622,899	89,054
Net incurrence of liabilities				394,555	2,632,080		3,254,979
Monetary gold and SDRs							
Currency and deposits	52,416	830,388	171,089		830,388	-70,640	759,748
Securities, other than shares	-989	105,789			329,294	619,698	948,992
Derivatives	337,058	66,711	42,183	213,635	65,722	-67,228	-1,506
Loans	62,431	60,986			653,862	-82,032	571,829
Shares and other equity		116,694			179,126	2,120	181,246
Insurance technical reserves		23,886			23,886	0	23,886
Other accounts payable <sup>f</sup>	-17,936	270,038	116,780	180,920	549,803	131,928	681,731
Unclassified items <sup>e</sup>						89,054	89,054

Continued.

Appendix 1. *Continued.*

Transaction Categories	Nonfinancial Corporation	Financial Corporation	General Government	Households <sup>a</sup>	Domestic Sectors <sup>b</sup>	Rest of the World	Total Volume
	Net Lending / Net Financing by Financial Instrument						
Net financing <sup>3</sup>	79,667	38,070	-56,645	248,406	309,499	-309,499	0
<i>Monetary gold and SDRs</i>		-19,617			-19,617	19,617	0
Currency and deposits	28,647	-591,487	-43,237	482,660	-123,416	123,416	0
Securities, other than shares	-53,027	392,342	93,133	9,741	442,189	-442,189	0
Derivatives	472	-44,410	0	0	-43,938	43,938	0
Loans	-336,294	569,888	-74,636	-213,635	-54,676	54,676	0
Shares and other equity	-46,157	-73,385	806	37,626	-81,110	81,110	0
Insurance technical reserves	0	-23,888	8	23,880	0	0	0
Other accounts receivable (+) / payable (-)	486,025	-171,373	-32,719	-180,920	101,013	-101,013	0
Unclassified items <sup>6</sup>				89,054	89,054	-89,054	0

... = data not available, SDRs = special drawing rights.

Notes:

<sup>a</sup>Includes entrepreneurial activities of households as well as all other unaccounted transactions in the domestic economy; also covers nonprofit institutions serving households (NPISH).

<sup>b</sup>Refers to the sum of the domestic sectors' transactions among themselves and with the rest of the world (ROW).

<sup>c</sup>Net acquisition of financial assets less net incurrence of financial liabilities.

<sup>d</sup>For the household sector, presented as net of accounts payable.

<sup>e</sup>Represents the unclassified financial assets/liabilities in the balance of payment, including derivatives.

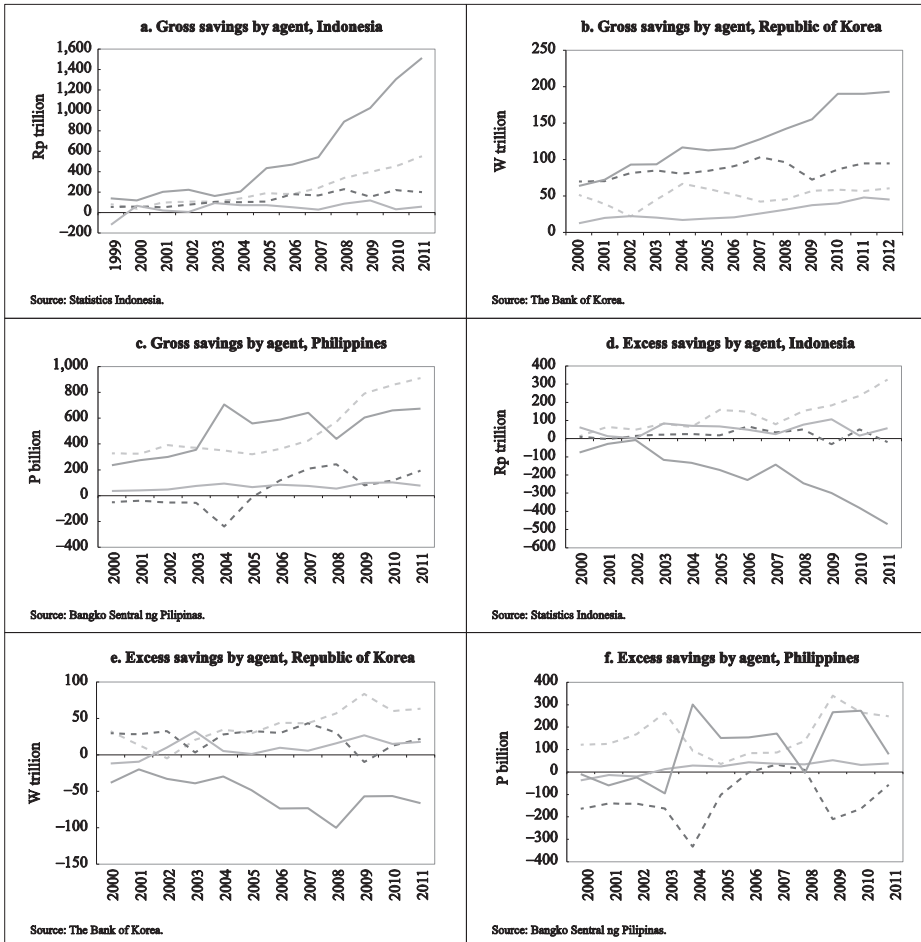
<sup>f</sup>Households' other accounts payable includes errors and omissions.

Details may not add up due to rounding off.

Source: Bangko Sentral ng Pilipinas.

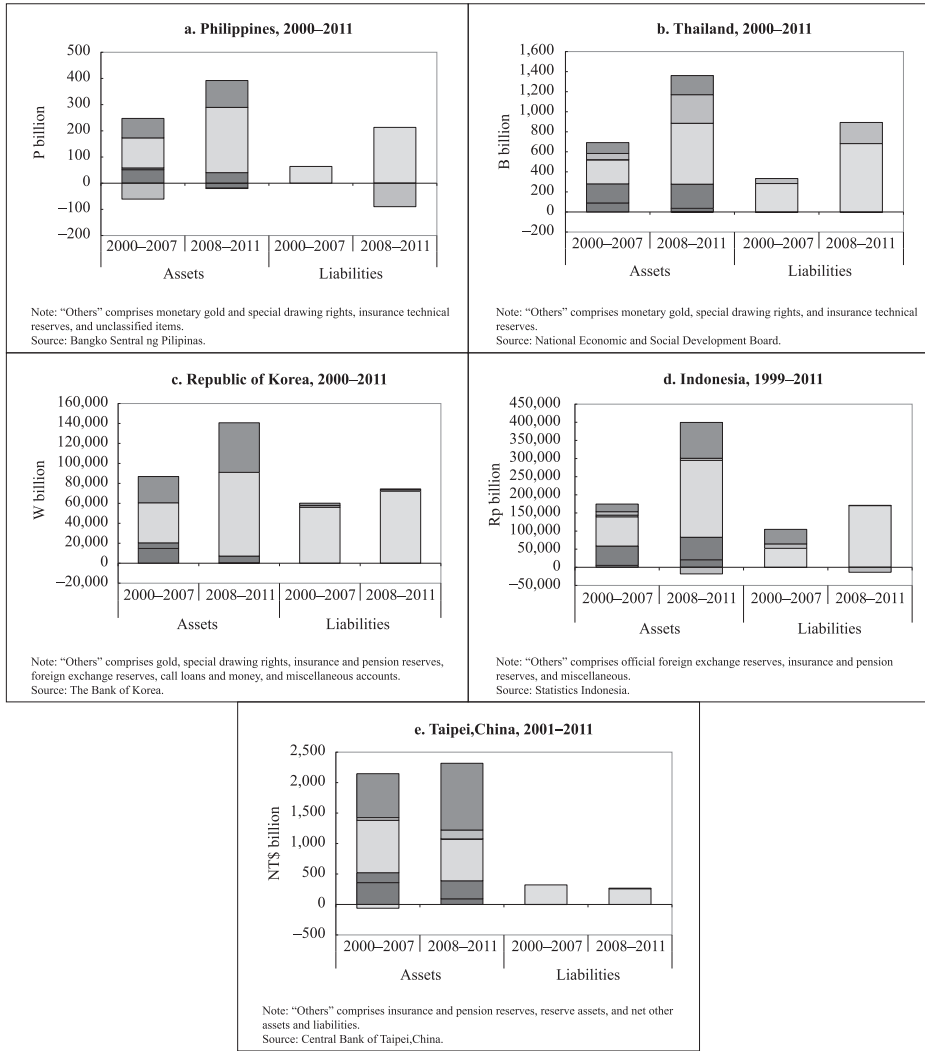


Appendix 2. Gross Savings and Excess Savings by Agent



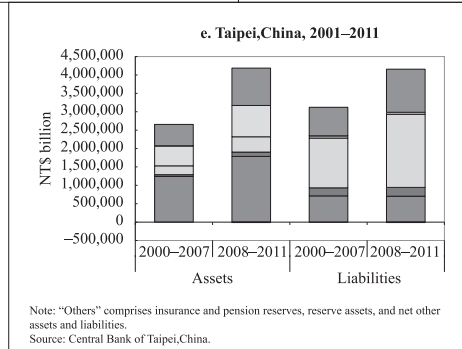
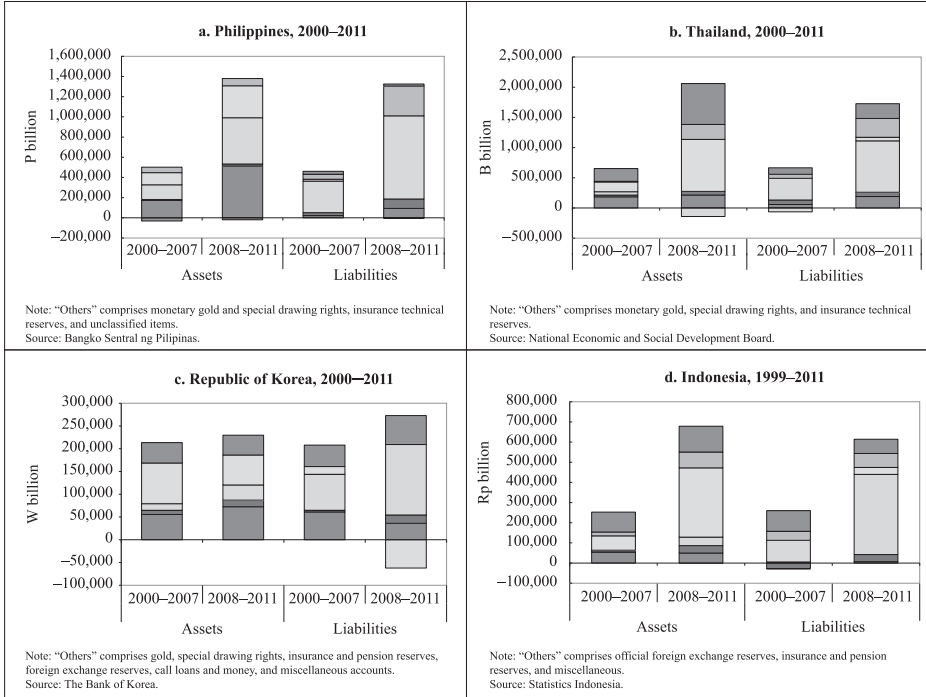
--- Households    --- Government    — Financial institutions    — Corporations (nonfinancial)

Appendix 3. Household Financial Assets and Liabilities



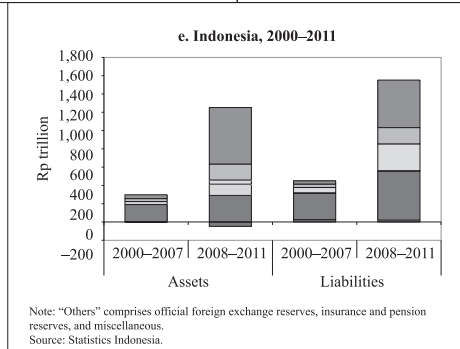
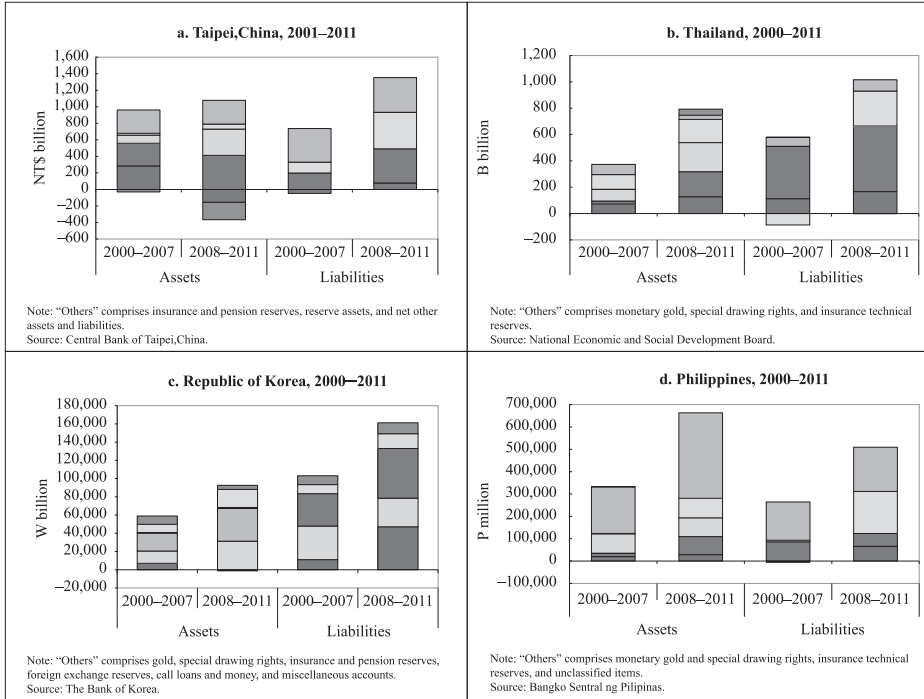
■ Securities □ Currency and deposits ■ Accounts payable and receivable ■ Shares and other equity □ Loans ■ Others

Appendix 4. Financial Assets and Liabilities of Financial Institutions



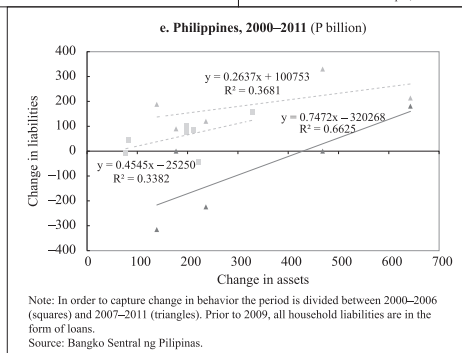
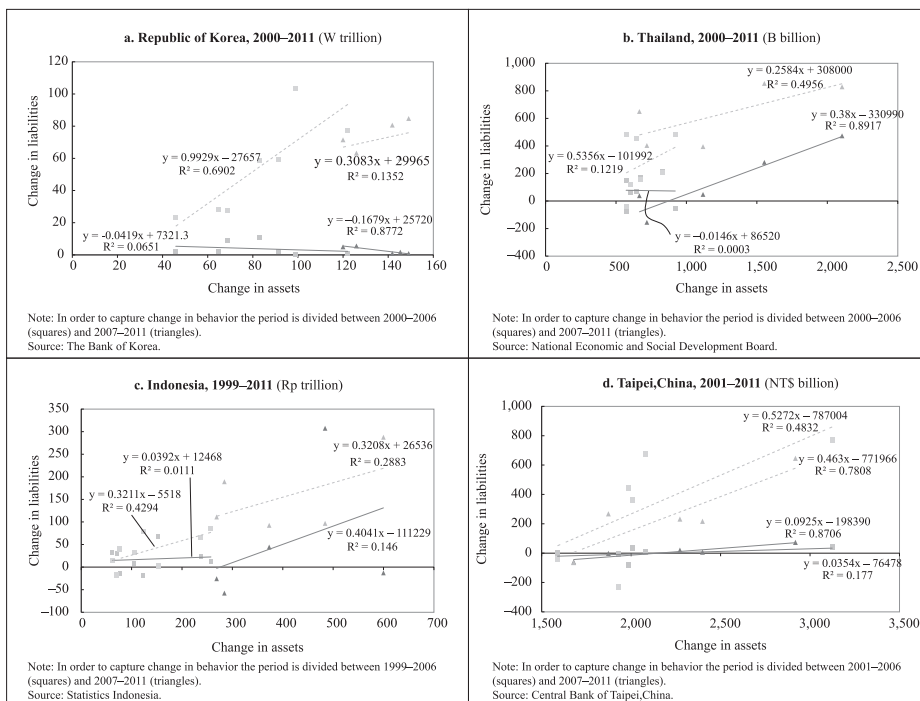
■ Securities □ Currency and deposits □ Accounts payable and receivable ■ Shares and other equity □ Loans ■ Others

Appendix 5. Financial Assets and Liabilities of Nonfinancial Corporations



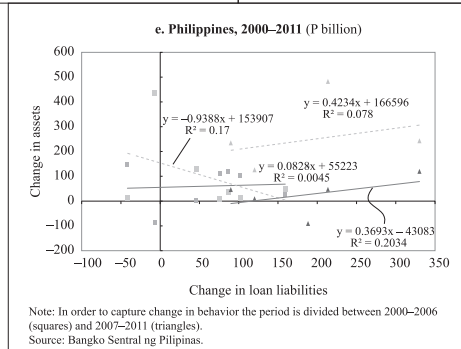
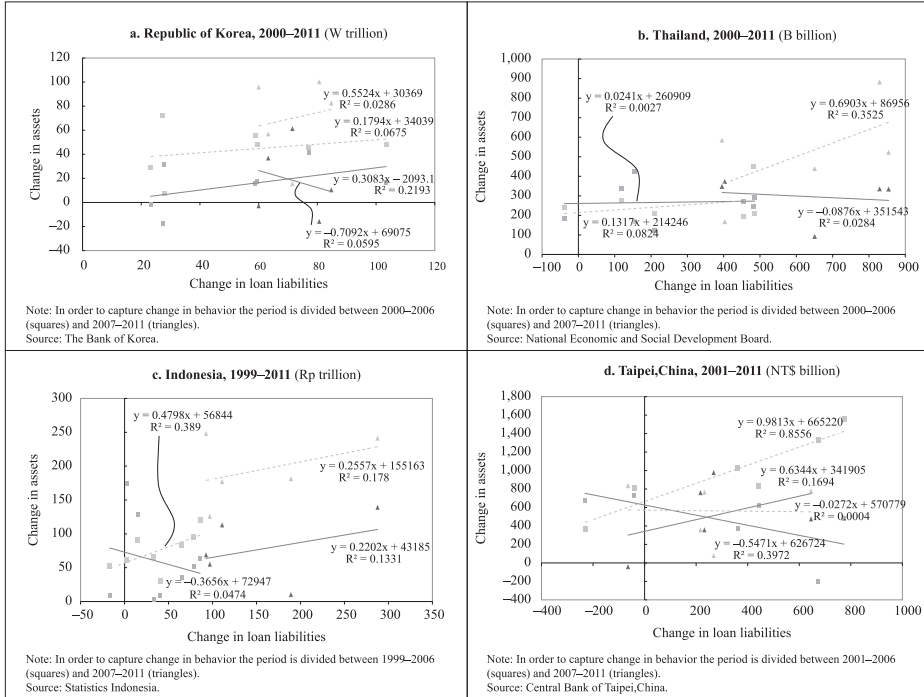
■ Securities □ Currency and deposits ■ Accounts payable and receivable ■ Shares and other equity □ Loans ■ Others

Appendix 6. Household Liabilities



— Nonloan    - - - - Loan

Appendix 7. Household Assets



— Securities and equities      - - - - Currency and deposits